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## A METHOD FOR ADMINISTERING MESSAGE ATTACHMENTS

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The invention is related to systems for processing messages and message attachments such as telephone, e-mail, and other systems.

5 2. Discussion of the Related Art

In modern times, communications and data processing tools continue to be enhanced and developed at an ever-increasing rate. The challenge of the day has become that of dealing with the information explosion that touches almost every aspect of people's lives. Many systems have been developed that help to automate the delivery of 10 communicated information. Systems that focus on fine-tuning the delivery and handling of such information improve upon its value and effectiveness to users.

Many of the voice message systems that exist today have a feature that provides the ability to forward voice messages from one recipient to one or more additional recipients. In addition, many of those systems frequently include a feature that allows a 15 user to record a further message as an attachment to the initial message, which is forwarded along with the initial message. Typically, the attachment contains a further explanation or comment regarding the initial message. As each attachment is added to the initial voice message, successive recipients are forced to listen to a string of attachments before being able to hear the initial message.

20 In some cases attachments do not add any additional information. They may provide nothing more than a historical track record of the earlier recipients who

forwarded the initial message or other non-essential information, such as might be provided by secretaries or other support personnel. However, in this and other situations, the ultimate recipient is forced to listen to all of the attachments before listening to the initial message. The process of reviewing attachments is inefficient and, at times, can 5 consume more user time than that required for listening to the initial message itself.

## **SUMMARY OF THE INVENTION**

The present invention is a method that simplifies the handling of telephone system voicemail, e-mail and other communicated messages thereby increasing effectiveness and reducing consumption of user time. Telephone voicemail systems that exist today 10 routinely provide the ability to record voice messages from a caller; many also provide recipients with the ability to forward voicemail messages to other recipients with attached comments. When the initial message and attachments reach their destination, the recipient must listen to all of the attached comments in order to hear the initial message. In such voicemail systems, messages may be sent over and over again with the possibility 15 of having a string of numerous comments attached.

The invention provides a user with the option to separate attachments and the initial message so that he or she can listen to any, all, or a combination of attachments, partial attachments, and the initial message. A user can also elect to selectively delete forwarding messages and/or attachments before forwarding to a further recipient. 20 Another feature of the invention provides users with additional security for initial messages and attachments by providing users with the ability to limit the transferability of initial messages and attachments.

The invention may be configured with any of a variety of different input/output control mechanisms including a telephone keypad, with or without voice prompting, dedicated pushbuttons associated with an access terminal, possibly including liquid crystal or other displays, voice recognition, and/or a computer interface.

5 In addition to the advantage of saving user time, the invention also provides a saving of system storage space.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 depicts the operational steps of the invention as used in conjunction with a voice messaging system.

10 Figure 2 shows a diagram of the internal architecture of a stored initial message and one attachment.

Figure 3 shows a diagram of the internal architecture of a stored initial message and two attachments.

15 Figure 4 shows a flow diagram of the operational steps of the non-forwardable and one-time-listenable message designation features of the invention as used for re-forwarded messages.

Figure 5 shows a flow diagram of the operational steps of the non-forwardable and one-time-listenable message designation features of the invention as used for initial messages.

20 Figure 6 shows a typical computer display of message and attachment information for an embodiment of the invention using a computer for input/output.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

The methodology of the invention may be applied for voice message systems based upon any of a wide variety of designs, user commands and/or options. An exemplary application of the methodology of the invention in a voice messaging system 5 is schematically illustrated in Figure 1. Although the system depicted in the figure includes conventional, high-level voice messaging functions, as indicated by the dashed lines, the focus of the presentation is on the application of the methodology of the invention with such a voice-messaging system. To that end, the functions directed particularly to the implementation of that methodology are shown by the solid lines in the 10 figure. Accordingly, it should be understood that, as to the conventional voice messaging system, the figure is not intended to provide a complete functional illustration of such a system, but rather to provide a high-level representation of that system as context for the application of the methodology of the invention.

Considering now the system and associated methodology depicted in Figure 1, the 15 initial interface to the voice messaging system for a user will normally be via an execution by the user of a LOGIN procedure 10, which will typically occur by means of a command executed at a user terminal (which may also include user-identification information and/or a password) -- thereby alerting the system of the user's desire to process voicemail. The user may have been notified of having received voicemail by 20 means of a visual display such as a digital display or indicator light. Upon logging into the voicemail system, the user is advised (Message Notification 20) as to the number of messages held in the user mailbox. Such message notification is typically provided by means of an automated system voice prompt informing the user of the availability of

received voicemail, and the number of messages received. After notification of the existence of voicemail, and the number of messages stored, the user typically can elect to listen to stored voicemail messages by selecting the appropriate command option. The typical voice message system provides several voice menu prompts, which may occur 5 contemporaneously with, or following the initial playing of a stored message. Exemplary such prompts are: "Press '1' to play/replay message, '2' to delete, '3' to save,..., '6' for other options," etc.

Upon receipt of such a system-generated voice prompt, a user may generally indicate a choice of command options by pressing a key on the telephone keypad. 10 Alternatively, pushbutton keys at a user terminal which are dedicated to voicemail commands may be provided. Other means for such user interface with the voice-mail command menu, including use of voice recognition techniques applied to spoken commands, will be apparent to those skilled in the art.

Some voicemail systems provide the ability to forward messages to another party. 15 Many such systems also provide a user with the option to forward messages to another party or parties with a comment attached. Such comments are more generally referred to as attachments. At the destination(s) of the forwarded message (including attachment(s)), a recipient may playback the original message and attachment(s) added by the forwarding party(ies) together as a combined unit. Usually, playback of any message begins with the 20 associated attachments, in order of the last recorded attachment played first, ultimately followed by the initial message.

In a voice-mail system implemented according to the method of the invention, a user is provided a set of attachment options by which various actions with respect to

message attachments may be selected. As previously indicated, for the voice-messaging system shown in Figure 1 conventional features are shown by dashed lines and the attachment-option features provided according to the invention are shown by solid lines. Accordingly, a user may, by selection of the appropriate keypad number, choose to

5 process either conventional voice-mail system actions **50, 60, 70 & 80** or attachment related actions **90, 120, 140 & 160** (and subsets thereof) in accordance with the methodology of the invention. [Note that numerals and other keypad symbols shown within functional blocks of the figure are intended to represent exemplary keypad choices for invoking the designated function. To avoid possible confusion with the reference

10 numbers shown in the figure outside each functional block, those functions will be described herein only with respect to such reference numbers.] It will, of course, be appreciated that the voice-messaging system depicted in Figure 1 is merely exemplary of such systems, and that the methodology of the invention is applicable to any voice-messaging system in which attachments may be added to an initially-received message.

15 In the operation of the invention, the system will provide information as to the number of messages being held for the user in response to a user's initial query of the system (as in conventional voice-mail systems). Upon selection by the user of a given message for playback, the system provides a further report as to whether the selected message also includes attachments (Attachment Notification **30**) and the number of such

20 attachments associated with the message. For example, the Attachment Notification function may cause the system to announce: "This is an N times forwarded message", where N represents the number of times that attachments have been appended to the initial message.

For a preferred embodiment of the invention, the user can interrupt this, or any other system prompt at any point by pressing a telephone keypad key to execute a system command—*e.g.*, commands designated **60**, **70**, **80** or **90** in Fig. 1. As a corollary, in the absence of a user interrupt, system functions will be engaged according to a default sequence. For example, if no user interrupt is received following the Attachment Notification, an exemplary default sequence would cause the voice-messaging system to playback message attachments in order of the most recent first, followed by the original message.

While the user might accept the default sequence, it is assumed, for purposes of describing the invention, that the user wishes to manage the attachments for the selected message, according to the methodology of the invention, and will therefore select the Attachment Option command **90**. Upon making that selection, the user will be prompted with the attachment selection options and, as before, may interrupt the options prompt at any time to select an option.

Options available to the user at that point include selection of Initial Message Playback 150 (which may, in an exemplary configuration, be selected by pressing the numeral "0") or selection of Attachment Playback 170 for playback of a selected one of the indicated attachments to the selected message. In an exemplary configuration, the selection of the Attachment Playback option, as well as of the specific attachment selected for playback, may be indicated by a keypad entry of a numeral between 1 and N (corresponding to the N available attachments). The Attachment Playback command 170 may be repeatedly selected by the user to listen to various of the N attachments as chosen by the user, as indicated by the appropriate keypad entry.

## Supplementary to the Message Playback 150 and Attachment Playback 170

options, additional attachment-related options are provided, preferably as a submenu from the Other command 120 (in order to conserve a limited selection of keypad numerals/symbols). For an exemplary configuration, the Other command may be selected by use 5 of the asterisk (\*) symbol. Among the supplementary attachment-related options available in the Other submenu are Playback All Attachments 200 (illustratively selected by a keypad numeral "3"), Delete Current Attachment 210 (illustratively selected by a keypad numeral "4") and Delete All Attachments 130 (illustratively selected by a keypad numeral "5"). It is noted that generic message handling options, such as Fast Forward 10 180 and Rewind 190, are applicable to either the Attachment Playback functions or to general message-processing functions, and are therefore shown in the figure in dashed outline. Other attachment-related options will be apparent to those skilled in the art and are intended to be encompassed within the scope of the invention.

To address the instance of a user wishing to end attachment processing activity in 15 respect to a given message -- *e.g.*, to select a different message for review of the message and/or attachment content, the invention provides a Return option 110 (illustratively selected by keypad symbol "#"). Upon selection of the Return option, which may be selected during a system prompt or during playback of a message or attachment, , attachment processing is halted and the user is returned to the Message/Attachment 20 Notification functions 20/30 for processing of the next stored voice message and/or attachments. This process can be repeated until the user either completes message and attachment processing or elects to leave the voicemail system.

It should be apparent that, although the choice of keypad number assignments presented in Figure 1 is a useful scheme which is consistent with some prior art voicemail systems, the number/keypad assignments are merely representative of a variety of available schemes. Other embodiments of the invention are envisioned using alternative 5 numbering schemes that nevertheless incorporate the novel elements described by the invention.

The invention may use any of a variety of input control mechanisms of which the most common is the telephone keypad. Another exemplary input control arrangement would include the use of pushbuttons that are dedicated to message handling. A variation 10 of using dedicated pushbuttons controls involves the use of pushbuttons in conjunction with liquid crystal or another type of display whereby the function performed by the pushbuttons may change according to which options had been selected earlier. By using such an arrangement, fewer pushbuttons would be required for the message control functions needed.

15 Yet another input control mechanism involves the use of voice recognition. A voice-recognition based system would permit the user to speak voice attachment and message control options. For example, after receipt by the user of notification as to the number of attachments in a similar manner as provided in the telephone keypad input control system, the user would speak such commands as "play all", "attachment 2", or 20 "attachment 2,5, and 7", or "play initial message", etc.

Finally, an additional input control mechanism would use a personal computer or other such terminal device. With such a system, the user may, for example, be provided with a video display of the voice message items available for review, listing all of the

initial messages and attachments. This system may also provide user prompts requiring input from the user as to which attachments are to be played. If a computer or other intelligent terminal is used for display and user input control, the computer may also be arranged to display other useful related information. The computer may, for example, be 5 programmed to retrieve from a data base the names and/or extension/phone numbers of the persons who have added their attachments to a given message and to display that information for the user.

An illustrative example of a user-interface display for such a computer-enhanced input arrangement is shown in Figure 6. In that figure, the display contains a line that 10 represents each voicemail message and related attachment. Each voicemail message and/or attachment may be selected by double-clicking on the line(s) for the message desired, or using the shift key-drag approach commonly used by various computer systems, or by entering the desired selection by keyboard. It should be understood, however, that the display of Figure 6 is merely illustrative, as the versatility of the 15 modern computer/intelligent-terminal permits a wide variety of alternate arrangements of such a computerized user interface. Those skilled in the art will readily discern numerous such variations, and all such variations are intended to be within the scope of the invention.

Management of stored attachment messages according to the method of the 20 invention includes a storage arrangement for messages and attachments that permits convenient access and efficient use of storage media. As schematically illustrated in Figure 2, for a message with one attachment, messages and their attachments are stored in the form of header and body records. As will be seen in the figure, the header section

310 includes a pointer to the initial message, 330 and the header section 320 includes a pointer to the message attachment, 340. All header blocks are the same size and are set up to store the same information. Typically, header blocks will contain the address or other location information of the corresponding initial message or message attachment

5 itself. The headers may be searched using a sequential, random or other available method. The headers may also contain information about the length of the message or attachment, source or other message-related information (e.g., read-one-time and non-forwardable message status information, as described below). [Note: Although the header/body analog is useful to characterize the relationship between the address/status

10 information of the header and the message content of the body, it should be understood that the header and body for a given message/attachment do not necessarily constitute a contiguous data record, and that the data record representing the message content (body) will, in at least some instances, be stored at a different memory address than its corresponding header information.] Messages/attachments in the body section may vary

15 in size depending upon the content of the stored message or attachment. They may not necessarily be contiguous and may be deleted as a result of user action, or reorganized by the system to effect efficient use of storage space. In Figure 3, a schematic depiction of a message with two attachments is shown organized according to the header/body storage approach of the invention. In the figure, the three headers, 350, 360 and 370 correspond

20 respectively to message body record 380 and attachment body records 390 and 400, and include respective pointers to each of those records.

It can thus be seen that the method of the invention permits the system to effectively find stored messages and attachments, yet accommodate the considerations

necessary for efficient storage, particularly the irregularity of message and attachment sizes and the potential for wasted storage space in the event that some attachments are erased.

An additional feature of the invention permits users to limit the life of messages 5 and message attachments, thereby saving storage space and, potentially, user time.

Accordingly, a user who records a voicemail message may designate the message as being not forwardable. In the alternative, the user may designate a voicemail message as being limited to a single re-play. Both of these features also provide an added security benefit for messages carrying sensitive information.

10       Figure 4 demonstrates the application of both features in the case of an exemplary message that is being re-forwarded to an additional party. Having begun to listen to messages, the user may elect to save a forwarded message for future review using a “save” feature **400** of the voice message system. However, if the message had been designated as one-time-listenable by a prior user, the invention will block the save 15 operation and provide an appropriate user prompt **440**, advising that the option is blocked for that message. If, on the other hand, the message had not previously been designated as one-time-listenable, it will be saved.

The user may likewise elect to forward a message to another user using the “forward” function **410**. If the message had been designated as either one-time- 20 listenable or non-forwardable, the invention will block the forwarding operation, **440**, and provide the user a prompt advising that the option is blocked for that message. If the message is not precluded from being forwarded, the system may be arranged to prompt

whether the user would like to designate the message as one-time-listenable or non-forwardable with regard to downstream users, and then perform the forward operation.

Figure 5 is a flow diagram showing the method for designating messages as non-forwardable or one-time-listenable at the time of initially recording the voice message.

5 The user places a call 450 and leaves a voice message 460 as is typical in prior art voicemail systems. Once the message has been recorded, the user is prompted and offered the option to designate the message as non-forwardable 470 or one-time-listenable 480, as described previously.

Finally, it can easily be seen that the method of the invention as it is described  
10 herein, for handling voice messages and attachments within a telephone communications system, has clear analogs in other communications systems, particularly e-mail systems. Just as telephone voicemail systems have originating messages with appended attachments, e-mail systems also typically have originating messages to which have been either appended or pre-pended any number of additional comments and/or messages. In  
15 the same manner as described earlier with regard to voicemail attachments, e-mail attachments may be of much less communicative value than the originating message or could indeed be totally superfluous. It is envisioned that an alternative embodiment of the current invention provides users with the necessary computer-prompted option to input, and/or select, any, all, or a combination of attachments for review, possible  
20 deletion or forwarding in the same manner as described herein for voicemail messages. Likewise, e-mail messages may be designated as one-time-listenable or non-forwardable.

While details of the invention are discussed herein with reference to particular examples to which the principles of the present invention can be applied, the applicability

of the invention to other devices and equivalent components thereof will become readily apparent to those of skill in the art.

Accordingly, it is intended that all such alternatives, modifications, permutations, and variations to the exemplary embodiments can be made without departing from the 5 scope and spirit of the present invention.

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